In the Claims

Current Status of Claims

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100.(**currently amended**) A flexible laminate comprising a monofilm-formed or multifilm-formed flexible ply A, and another monofilm-formed or multifilm-formed flexible ply B, both ~~mainly~~ comprising orientable thermoplastic polymer materials, in which the ply A has a fluted configuration and the ply B on a first side is adhesively bonded in bonding zones to ~~the~~ crests on a first side of the ply A,

where:

(a) the ply B also has a fluted configuration, ~~the~~ a flute direction of the ply B ~~forming~~ forms an angle from ~~generally~~ about 30° up to and including 90° to ~~the~~ a flute direction of the ply A and the ~~said~~ bonding zones being on ~~the~~ crests of the first side of the ply B to produce spot ~~bonding~~ bonds with the crests on the first side of the ply A,

(b) the adhesive bonding is

(i) directly the ply A to the ply B and established through a lamination layer on the ply A and/or the ply B;

(ii) established through a separate thin bonding film; or

(iii) through a fibrous web adapted for bonding, and

(c) ~~the~~ wavelengths of the flutes in the ply A and/or the ply B are no longer than 5 mm, and the wavelengths of the flutes in both the ply A and the ply B are less than 10 mm.

101.(**currently amended)** The laminate according to claim 100, wherein either ~~the~~ a thickness of each of the ~~said~~ plies is ~~generally~~ substantially the same in the bonding zones ~~bonded~~ and ~~unbonded~~ non-bonding zones, or at least one of the plies exhibits first ~~solid-state-~~attenuated zones extending parallel to the flute direction, each bonding zone ~~mainly~~ being substantially located within ~~such a~~ the first attenuated zones whereby each first attenuated zone is understood as delimited by the positions where the thickness is an average between ~~the~~ a minimum thickness of this ply within the first attenuated zones and ~~the~~ a ply's maximum thickness within ~~the~~ adjacent ~~non-bonded~~ non-bonding zones.

102.(**currently amended)** The laminate according to claim 100, wherein the flute wavelength in each of the two plies is no more than 4 mm~~, preferably no more than 3 mm and still more preferably no more than 2 mm~~.

103.(**currently amended)** The laminate according to claim 100, wherein each of the two plies ~~the~~ a curved length of a flute is on average at least 5% ~~and preferably at least 10%~~ longer than the linear wavelength, the curved length being understood as the length of a curve through ~~the~~ a cross section of a full flute wave including the bonding zone which curve lies in the middle between the two surfaces of the ply.

104.(**currently amended)** The laminate according to claim 103, wherein ~~at least one of said~~ the ~~plies the said~~ the average thickness of at least one of the plies is at least 15% of the ply's maximum thickness.

105.(**currently amended)** The laminate according to claim 103, wherein ~~the~~ a width of each bonding zone in at least one of the two plies is no less than 15%~~, preferably no less than 20%, and still more preferably no less than 30%~~ of the flute wavelength.

106.(**currently amended)** The laminate according to claim 100, wherein the flutes in at least one of the two plies are evenly formed and extend in a ~~generally~~ substantially rectilinear shape.

107.(**currently amended**) The laminate according to claim 100, wherein the flutes in at least one of the two plies, while extending ~~mainly~~ substantially along one direction, are curved, or ~~zig-zagging~~ zig-zagged and/or branched.

108.(**currently amended**) The laminate according to claim 100, wherein the flutes in at least one of the two plies, while extending ~~mainly~~ substantially along one direction, are differently shaped in a pattern which gives a visual effect showing a name, text, logo or similar visual effect.

109.(~~mainly~~ substantially) The laminate according to claim 100, wherein at least one of the two plies has a metallic or iridescent gloss, or the two plies have different ~~colors~~ colors.

110.(**currently amended**) The laminate according to claim 100, wherein the ~~main~~ flute direction ~~in which the flutes~~ of the ply A ~~extend~~ is ~~generally~~ substantially perpendicular to the ~~main~~ flute direction ~~in which the flutes~~ of the ply B ~~extend~~.

111.(**currently amended**) The laminate according to claim 110, wherein one of the ~~said~~ two flute directions essentially coincide with ~~the~~ a machine direction of ~~the~~ lamination.

112.(**currently amended**) The laminate according to claim ~~100~~101, wherein the ply A, outside its first attenuated zones, if such zones are present, is molecularly oriented ~~mainly~~ in a direction parallel to ~~the direction of~~ its ~~flutes~~ flute direction or in a direction ~~close~~ substantially parallel to ~~the latter~~ its flute direction as determined by shrinkage tests.

113.(**currently amended**) The laminate according to claim 112, wherein the ply B ~~also~~ is molecularly oriented and a ply B's orientation outside its first attenuated zones, if such zones are present, is higher than a ply A's average orientation in the same direction outside its first attenuated zones, if such zones are present, the ~~said~~ two orientations being observable by shrinkage tests.

114.(**currently amended**) The laminate according to claim 112, wherein ~~the~~ a yield tension in the ply A in a direction parallel to ~~with~~ its ~~flutes~~ flute direction and/or ~~the~~ a yield tension in the ply B in a direction parallel to ~~with~~ its ~~flutes~~ flute direction, both referring to the cross- section of the

respective ply and determined in non-bonded narrow strips at an extension velocity of 500%min^{-1}, is no less than 30 MPa~~, preferably no less than 50 MPa and still more preferably no less than 75 MPa~~.

115.(**currently amended**) The laminate according to claim 100, wherein the ply B has a lower coefficient of elasticity than the ply A, both as measured in the direction perpendicular to the flute direction of the ply A.

116.(**currently amended**) The laminate according to claim 112, wherein the choice of material for the ply B and of depth of the ply A's fluting is such that by stretching of the laminate perpendicular to the direction of the ply A's fluting up to the point where the ply A's waving has disappeared, the ply B still has not undergone any significant plastic deformation~~, preferably the ply B comprises a thermoplastic elastomer~~.

117.(**currently amended**) The laminate according to claim 112, wherein the ply B, outside its first attenuated zones if such zones are present, has a main direction of molecular orientation parallel to the direction of the flutes or in a direction close to the latter as provable by shrinkage tests.

118.(**currently amended**) The laminate according to claim 112, wherein the ply A is composed of several films, and the said main direction of molecular orientation, is the resultant of different monoaxial or biaxial orientations in the said films optionally mutually differently directed.

119.(**currently amended**) The laminate according to claim 117, wherein the ply B is composed of several films, and the said main direction of orientation is the resultant of different monoaxial or biaxial orientations in the said films optionally mutually differently directed.

120.(**currently amended**) The laminate according to claim ~~100~~101, wherein the first attenuated zones are present in at least one of the two plies ~~wherein~~ and if ~~such~~ the first attenuated zones ~~of attenuated ply~~ extend in their transverse direction beyond ~~the~~ corresponding bonding zones ~~of bonding~~ into adjacent non-bonding ~~non- bonded~~ zones~~ of the ply~~, the extensions within each ~~non-bonded~~ non-bonding zone are limited to a total width which leaves more than half of ~~and~~

preferably no less than 70% of the a width of the non-bonded non-bonding zone as not belonging to any first attenuated zone, these widths being the distances measured along the curved surfaces.

121.(**currently amended**) The laminate according to claim 100101, wherein the first attenuated zones are present in at least one of the plies and in which the bonding zones are generally substantially coincident with the first attenuated zones.

122.(**currently amended**) The laminate according to claim 100101, wherein the first attenuated zones are present at least in one of the two plies and : characterised characterized by a second solid-state-attenuated zones between each pair of adjacent first attenuated zones, said the second attenuated zones being narrower than said the first attenuated zones and located on the non-bonded crests of the respectively ply.

123.(**currently amended**) The laminate according to claim 100101, wherein at least one of the two plies exhibits solid-state-attenuated zones wherein the first attenuated zones of the ply are attenuated so that the minimum thickness in such zone is less than 75% of the maximum thickness of the ply in the non-bonded zones, preferably less than 50% and more preferably less than 30% of that maximum thickness.

124.(**currently amended**) The laminate according to claim 100, wherein the ply A and the ply B consist of comprise a material which is orientable at room temperature, preferably they mainly consist of polyolefin.

125.(**currently amended**) The laminate according to claim 100, wherein the spot-bonding spot bonds between the plies A and B is effected through a lower melting surface layer on at least one of the plies, formed in a coextrusion process.

126.(**previously presented**) The laminate according to claim 100, wherein at least one of the plies comprises a barrier film designed for protection against oxygen or other gaseous materials.

127.(**currently amended**) The laminate according to claim 100, wherein at least some of the flutes in one or both plies are flattened at intervals and ~~preferably~~ bonded across each ones entire width at the flattened locations to make ~~the~~ two arrays of flutes form closed pockets.

128.(**previously presented**) The laminate according to claim 127, wherein the flattened portions of a number of mutually adjacent flutes or of all flutes are in an array.

129.(**currently amended**) The laminate according to ~~any of~~ claim 100, wherein by the choice of polymer material or by an incorporated filler or by orientation, ~~the~~ a coefficient of elasticity E in at least one of the plies, measured in the ~~unbonded zone~~ non-bonding zones of the ply in the direction parallel to the flute, as an average over the ~~unbonded zone~~ non-bonding zones is no less than 700 MPa~~, and preferably no less than 1000 MPa~~.

130.(**currently amended**) The laminate according to claim 100, wherein at least some of the channels formed by the flutes in the ply A and the ply B, which channels may be closed to pockets, contain a filling material in particulate, fibrous, filament or liquid form.

131.(**currently amended**) The laminate according to claim 130, wherein ~~said~~ the material is a preservative for goods intended to become packed in or protected by the laminate, ~~preferably an oxygen scavenger or ethylene scavenger, a biocide, such as a fungicide or bactericide,~~ a corrosion inhibitor or a fire extinguishing agent~~, optionally with micro-perforations established in the flutes to enhance the effect of said preservative~~.

132.(**currently amended**) The laminate according to claim 100, wherein both the ply A and the ply B are supplied with a multitude of perforations, whereby the perforations do not reach into the ~~bonded spots~~ spot bonds, and the perforations in the ply A are displaced from the perforations in the ply B so as to cause gas or liquid when passing through the laminate, to run a distance through the flutes ~~generally~~ substantially parallel to the main surfaces of the laminate; ~~the~~ channels formed by the flutes may be closed to form pockets.

133.(**previously presented**) The laminate according to claim 132, wherein the channels or pockets

contain filling material adapted to act as a filter material by holding back suspended particles from a fluid passing through the channels or pockets or is an absorbent or ion-exchanger capable of absorbing or ion-exchanging matter dissolved in such fluid, ~~said~~ the filler optionally being fibre-formed or yarn-formed.

134.(**currently amended**) The laminate according to claim 133, wherein by choice of hydrophobic properties of at least the inner surfaces of the channels or pockets formed by the flutes and by selected small spacing of said channels or pockets, and choice of the distances between the mutually displaced perforations in the ply A and the ply B, there is achieved a desirable balance between the pressure needed to allow water through the laminate and the laminate's capability to allow air and vapour to pass therethrough.

135.(**currently amended**) The laminate according to claim 132, ~~wherein by a nap of~~ further comprising fibre~~-like~~ film portions protruding from ~~the~~ borders of the perforations of at least on one surface of the laminate.

136.(**currently amended**) The laminate according to claim 134, used as a sanitary backsheet, ~~preferably~~ on a diaper or as a sheet for covering a patient during surgery.

137.(**previously presented**) The laminate according to claim 134, used for insulation of buildings.

138.(**previously presented**) The laminate according to claim 132, used as a geotextile which allows water to pass but holds fine particles back.

139.(**currently amended**) A bag made from the laminate according to any of the claims 100 to ~~139~~138, wherein the flutes on one of the two major surfaces of the bag are ~~generally~~ substantially perpendicular to the flutes on the other major surface of the bag.

140.(**withdrawn and currently amended**) A method of manufacturing a laminate of a first monofilm-formed or multifilm-formed ply with a second monofilm-formed or multifilm-formed ply both mainly consisting of orientable thermoplastic polymer material, in which the first ply hasa

waved flute configuration, and the second ply on a first side is adhesive bonded in bonding zones to the crests on a first side of A, in which further the waved flute structure of the first ply is formed by the use of a grooved roller, and the said bonding with the second ply is carried out under heat and pressure and also under use of a grooved roller, wherein

a) the second ply also is given a waved configuration, whereby under use of at least one grooved roller the flute direction of the second ply is made at an angle to the flute direction of the first ply and the said bonding zones are established on the crests of the first side of the second ply to introduce ~~spot bonding~~ spot bonds with the crests on the first side of the first ply,

b) the adhesive bonding

I) is directly first to second ply and established through a lamination layer on at least one of these plies;

ii) established through a separate thin bonding film; or

iii) established through a fibrous web adapted to the bonding; and

c) the wavelengths of the flutes in both plies are no longer than 10 mm, and the wavelengths of the flutes in at least one of the plies are no longer than 5 mm.

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173.(**withdrawn and currently amended**) A laminating apparatus comprising a grooved roller for fluting a first ply of thermoplastic polymer material, a grooved roller for fluting a second ply of thermoplastic polymer material, means for directing the first and second plies from their respective grooved rollers to a laminating station with the plies arranged in face to face contact with one another and with the flutes of the first ply ~~generally~~ directed at an angle to the flutes of the second ply, the laminating station comprising grooved laminating rollers which apply heat and pressure between the plies to bond the plies together at the crests of the flutes of the second ply to form a laminate, the grooved fluting rollers and the grooved laminating rollers having groove pitches such that in the laminate the plies each have flutes of wavelength less than 10 mm and the flutes of at least one of the plies have a wavelength no longer than 5 mm.

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199.(**new**) The laminate according to claim 102, wherein the flute wavelength in each of the two plies is no more than 3 mm.

200.(**new**) The laminate according to claim 102, wherein the flute wavelength in each of the two plies is no more than 2 mm.

201.(**new**) The laminate according to claim 103, wherein each of the two plies the curved length of a flute is on average at least 10% longer than the linear wavelength.

202.(**new**) The laminate according to claim 105, wherein the width of each bonding zone in at least one of the two plies is no less than 20%of the flute wavelength.

203.(**new**) The laminate according to claim 105, wherein the width of each bonding zone in at least one of the two plies is no less than 30% of the flute wavelength.

204.(**new**) The laminate according to claim 114, wherein the yield tension in the ply A in a direction parallel to its flute direction and/or the yield tension in the ply B in a direction parallel to its flute direction, both referring to the cross-section of the respective ply and determined in non-bonded narrow strips at an extension velocity of 500%min^{-1}, is no less than 50 MPa and still more preferably no less than 75 MPa.

205.(**new**) The laminate according to claim 114, wherein the yield tension in the ply A in a direction parallel to its flute direction and/or the yield tension in the ply B in a direction parallel to its flute direction, both referring to the cross-section of the respective ply and determined in

non-bonded narrow strips at an extension velocity of 500%min^{-1}, is no less than 75 MPa.

206.(**new**) The laminate according to claim 116, wherein the ply B comprises a thermoplastic elastomer.

207.(**new**) The laminate according to claim 120, wherein the total width of the extensions leaves no less than 70% of the width of the non-bonding zone as not belonging to any first attenuated zone.

208.(**new**) The laminate according to claim 122, wherein the first attenuated zones of the ply are attenuated so that the minimum thickness in such zone is less than 50% of that maximum thickness.

209.(**new**) The laminate according to claim 122, wherein the first attenuated zones of the ply are attenuated so that the minimum thickness in such zone is less than 30% of that maximum thickness.

210.(**new**) The laminate according to claim 123, wherein the ply A and the ply B comprise a polyolefin.

211.(**new**) The laminate according of claim 129, wherein the the average over the non-bonding zone is no less than 1000 MPa.

212.(**new**) The laminate according to claim 131, wherein the preservative is selected from the group consisting of an oxygen scavenger, ethylene scavenger, and a biocide.

213.(**new**) The laminate according to claim 131, wherein the laminate further includes micro-perforations established in the flutes, which enhance the effect of the preservative.